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## A NOTE ON *PRODENIA ORNITHOGALLI* GN. (LEPIDOPTERA, PHALAENIDAE) \*

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In the 'Contributions' Vol. V (2) 80/1, Benjamin has attempted to straighten out the synonymy of this species and the allied *praefica* Grt. Unfortunately, after carefully checking over the material in our Collection, I find that he has only added to the nomenclatorial confusion.

In the first place he ignores the fact (or at least makes no mention of same) that the suffusion of the median area of primaries to a greater or less degree with yellow is purely a male character; Hampson pointed this out in his Cat. Lep. Phal. Brit. Mus. VIII, 248, correctly listing *eudiopta* Gn. (based on the normal male) as a synonym of *ornithogalli* Gn. (based on a female) which has page priority. The amount of yellow suffusion in the male sex is variable; a few specimens are nearly as dark on the primaries as the female but the majority show considerable brownish-yellow suffusion, and it was evidently one of these Guenee had before him when drawing up the description of *eudiopta*.

In the second place Benjamin has apparently (at least partially) misidentified *praefica* Grt. when he states that 'the only genitalic difference seems to be in the clasper which in this species extends to, or nearly to the edge of the valve; about one-quarter longer than in *P. ornithogalli*'. I have made slides of several Californian and Utah specimens of *praefica* and find that there are good distinctions in the armature of the aedeagus, the shape of the clavus, and the lesser width of the valve (or as I term it clasper). *Praefica* is distinguished superficially by the darker secondaries which show a distinct discal dot, whereas in both sexes of *ornithogalli* the secondaries are largely hyaline-white with no trace of a discal spot. I doubt further if the males ever show any strong suffusion of yellow in the median area of primaries. This leads us to Benjamin's third error where he describes (p. 81) *eudioptoides* B. & B. as an extremely yellow form of *praefica* from San Diego, Calif. I have before me a paratype of this form and a good topotypical series and find that on genitalia and characters of the secondaries it must be referred to *ornithogalli* Gn., the name apparently falling to *flavimedia* Harv. which Hampson (*op. cit.*) with the type before him characterized as 'Ab. 1. Forewing with the inner medial area more prominently ochreous'. It is possible that Dyar's record of *latifascia* Wlk. from Brownsville, Tex. (1911, Proc. Ent. Soc. Wash. XIII, 20) may be based on similar yellow males which appear to occur more prevalently in Southern areas; the matter needs looking into.

I propose, in the light of the above, the following rearrangement of the species

- 2678 *ornithogalli* Gn.
  - ♂, *eudiopta* Gn.
  - ♀, *lineatella* Harv.
  - form ♂ *flavimedia* Harv.
  - eudioptoides* B. & B.
- 2679 *praefica* Grt.

\*Contribution No. 2193, Division of Entomology, Science Service, Department of Agriculture, Ottawa.

## TWO UNNOTICED GENERIC NAMES IN THE SPHECOID WASPS, WITH NOTES ON OTHERS (HYMENOPTERA, ACULEATA)

BY V. S. L. PATE,

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Two hitherto unnoticed generic names in the sphecoïd wasps have recently come to my attention. Although the first, *Dryphus*, is clearly a synonym, as may also the second, *Stercobata*, be, nevertheless, since both will preoccupy any future usage of these names for valid generic entities, they are noted here in order that they may eventually find their way into the proper universal lists of generic names of animals.

Notes on several previously known generic or subgeneric names are appended at the end.

### *Dryphus* Herrich-Schaeffer

*Dryphus* (?) Herrich-Schaeffer, Nomencl. Entom., Zw. Hft., p. 123, (1840).

In the Synonyma Hymenopterorum of his *Nomenclator Entomologicus*, Herrich-Schaeffer gives this name with the statement: "v. *Corynopus*", under which he lists but one species, *Crabro tibialis* [Fabricius, 1798=*Sphex coarctata* Scopoli, 1763] which thus becomes the type of *Dryphus* by virtual monotypy. However, inasmuch as *coarctata* is likewise the type of *Corynopus* Lepeletier and Brullé, 1835, *Dryphus* falls as an absolute synonym of that subgenus of *Euphilis*.

### *Stercobata* Gussakovskij

*C[ercheris]* (*Stercobata*) Gussakovskij, Trav. fil. Acad. Sci. U. R. S. S., Tadjikistan, no. 5, [Trud. Tadjik. Sect. Akad. Nauk, S. S. R.] p. 445, (1935).

In a list of the sphecoïd and vespoïd Hymenoptera of Tadjikistan, Gussakovskij employs the name *Stercobata* in a subgeneric sense for one species, *C[ercheris]* (*Stercobata*) *bupresticida* Dufour, 1841, which thus becomes the type of this name by monotypy. Although credited here to Gussakovskij, I suspect that *Stercobata* may eventually prove to be a previously unnoticed or manuscript name of Shestakov who has written rather extensively upon the Palaearctic, particularly the Russian and Siberian, *Cercheris* during the past thirty years. But I can find no proposal of *Stercobata* prior to Gussakovskij's citation, in a perusal of such papers of Shestakov as are now available to me. At it now stands *Stercobata* Gussakovskij, 1935, is an absolute synonym of *Bucerceris* Minkiewicz, 1934: both have the same species, *Cercheris bupresticida* Dufour, 1841, as type.

The genus *Cercheris* is an enormous cosmopolitan complex, divisible into a great number of natural species groups. Yet aside from the distinctive Neotropical entities *Didesmus* Dahlbom, 1845, and *Paracercheris* Bréthes, 1913, only one valid name, *Bucerceris* Minkiewicz, 1934, is available for any group other than the nominate one of which *Apiraptrix* Shestakov, 1923, and *Apicercheris* Minkiewicz, 1934, are absolute synonyms. Giner Mari in his excellent recent reviews of the Spanish (1941, Eos, XV, pp. 7-93) and Palaearctic African (1941 Eos, XVII, pp. 135-291) species of *Cercheris* recognizes two subgenera, but his nomenclature of them is incorrect. Giner Mari employs *Apiraptrix* [sic] Shestakov for the nominate subgenus, and *Cercheris* for the atypical one which should be properly known as *Bucerceris* Minkiewicz, since it includes the species *bupresticida* Dufour.

### *Hemidula* Burmeister

*Monedula* [*Monedula* (*Hemidula*)] Burmeister, 1874. Bol. Acad. Nac. Cienc. Ex. Univ. Cordova, Argentina, I, p. 119. [Three species.]

TYPE: *Monedula* [*Hemidula*] *singularis* Taschenberg, 1870 [= *Hemidula singularis* (Tasch.)]. (By designation of Parker, 1917, Proc. U. S. Nat. Mus., LII, p. 2.)

Through an unfortunate clerical error, *Hemidula* Burmeister was inadvertently omitted from the final draft of my manuscript on the generic names of the sphecoïd wasps and their type species (Mem. Amer. Ent. Soc., no. 9, 1937).

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**Aporina** Gussakovskij

*Psen* (*Aporina*) Gussakovskij, Trav. Inst. Zool. Acad. Sci., U. R. S. S., IV, p. 665, (1937). [Not Fuhrmann, 1902.]

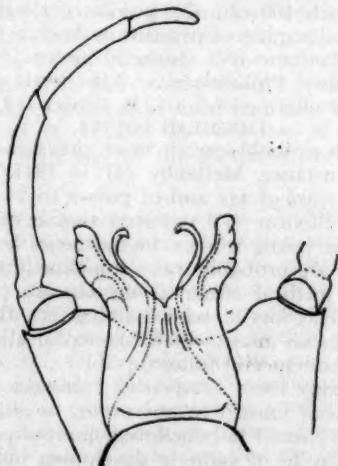
Gussakovskij proposed *Aporina* as a new name to replace the twice pre-occupied *Aporia* of Wesmael, 1852. But *Aporina* Gussakovskij is a homonym of Fuhrmann's 1902 cestode name. However, both *Aporia* Wesmael, 1852, and *Aporina* Gussakovskij, 1937, are absolute synonyms of *Mimesa* Shuckard, 1837, a valid subgenus of *Psen* Latreille.

**A NEW CINYGMULA FROM BRITISH COLUMBIA  
(EPHEMEROPTERA) \***

BY J. McDUNNOUGH,  
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***Cinygmula kootenai* n. sp.**

*Male.* Body almost entirely brown with the meso- and metathoracic tergites deep pitch-black. The three posterior abdominal segments are more opaque, somewhat deeper brown and show traces of geminate dorsal lines; ventrally these segments are paler. Legs brown, the fore-tarsi with joints 1 and 4 subequal and about two-thirds the length of joint 2 which is equal to joint 3; claws dissimilar. Setae dull smoky, faintly ringed with darker in basal section.



*Cinygmula kootenai* n. sp., male genitalia.

Wings hyaline, with traces of blackish shading at extreme base; veins and cross-veins very fine, brown; 4 or 5 extremely faint crossveins before the bulla; pterostigmatic crossveins more distinct, with only occasional trace of anastomosis. Genital plate with excavated posterior margin. Penes bent outward in apical half; the very distinctive stimuli are long, thin, and curved inwards (i. e. towards each other) in their apical portion.

*Holotype*—♂, Nixon Creek, Kootenay Riv. Kootenay National Park, June 13, 1941 (Geo. R. Hopping); No. 5387 in the Canadian National Collection, Ottawa.

*Paratypes*—18 ♂, same data.

\*Contribution No. 2200, Division of Entomology, Science Service, Department of Agriculture, Ottawa.

## THE CONTROL OF PEDICULOSIS AND SCABIES BY MEANS OF PREPARATIONS CONTAINING PYRETHRINS, ROTENONE, AND ALIPHATIC THIOCYANATES\*

BY C. R. TWINN AND C. G. MacNAY,  
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The problem of controlling human lice and scabies is a serious one, especially under war conditions. During the World War of 1914-1918, lice and louse-borne diseases and the skin infection caused by sarcoptic mites were the source of large numbers of casualties among the belligerents. Since that time several insecticides have been developed which show promise of being valuable pediculicides and acaricides. Prominent among them are the aliphatic thiocyanates and products prepared from rotenone-bearing roots such as derris and cube. Another insecticide, pyrethrum, which was available but of uncertain quality during the last war, has since been greatly increased in value by improvements in methods of extraction and standardization.

This paper reports the results from a number of experiments carried out in 1941 and 1942 against lice and scabies with preparations containing one or other of these materials. The products used, in various dilutions and carriers, included: (1) a mixture of aliphatic thiocyanates consisting of 12½% n-butyl-carbitol thiocyanate and 37½% beta-thiocyanoethyl esters of aliphatic fatty acids by volume in a refined kerosene base (Lethane 384 Special); (2) extracts of derris root in camphor sassafrassy oil and in pine oil, containing 5 grams of rotenone in each 100 cc.; (3) powdered derris root (5% rotenone); and (4) 20 lb. and 30 lb. extracts of pyrethrum flowers (Pyrefume Super 20 and Pyrefume Super 30). Lethane is a synthetic insecticide manufactured by the Röhm and Haas Company, Philadelphia. The derris powder, and derris and pyrethrum extracts, were obtained from S. B. Penick & Co., New York City.

### THE HEAD LOUSE†

The head louse is probably much more prevalent than is generally realized. In England, for instance, Mellanby (4) in 1941, stated that "practically 50% of children 2 to 4 years of age and of girls 5 to 14 in towns and cities are infested." Busvine and Buxton (1) reported that evidence indicates that the incidence of head lice in young women in industrial areas in Britain is about 30% to 50%. Head lice are probably quite common in Canada. MacHaffie (3) stated that: "As school medical officer of the Ottawa public schools my chief concern has been the great loss of school attendance from this cause and the amount of the school nurses' time which has to be allocated to pediculosis detection, exclusion, treatment and follow-up . . ."

Apparently, the body louse (*Pediculus humanus corporis* Deg.) is much less common than the head louse. In any event, no infestations of the former were brought to our attention. It is believed, however, that the results of tests against the head louse may be of value in developing improved control methods against the body louse.

In February, 1941, arrangements were made with Dr. T. A. Lomer, Medical Officer of Health, Ottawa, to carry out some tests against head lice on school children who presented themselves for delousing at a local clinic. These tests were carried out on March 8, March 22, and May 10, 1941. A total of 60 children were treated, including 13 boys and 47 girls, all of whom were infested in varying degree, some heavily, especially the girls.

The applications were made by public school nurses under direction. The children were seated for treatment at tables on which were spread clean sheets of paper. The nurses applied the insecticides by rubbing them well into the hair and scalp with their fingers, like a shampoo. About one-quarter fluid

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†*Pediculus humanus humanus* L.



ounce (7.5 cc.) of the liquid preparations was sufficient to treat the girls' hair; one-half that quantity was used on the boys. Derris powder, the only dry preparation tested, was applied at the rate of one level teaspoonful (about 20 grains) to each female head. The children were required to keep their eyes covered while the powder was being rubbed through their hair. Specimens of lice which fell upon the paper during the treatments were picked up carefully with forceps and kept a few days in pill boxes to ascertain if any would recover. The name of each child and the material used was recorded, and the nurses were instructed to forward, after a few days, hair clippings from them bearing nits for examination under the microscope. Information as to whether the hair had been washed or otherwise treated subsequent to the application, and the presence or absence of lice was also requested. The nurses carried out the inspections from three to ten days after the treatments and submitted clippings from every child. Table I. is a summary statement of the mixtures used, the number of cases treated, and the results therefrom.

The following table shows that all the materials tested are lethal to head lice, and that pyrethrum extract and Lethane are apparently effective in concentrations as low as ordinary spray strength. The value of derris extract would probably be enhanced by using a more suitable solvent as a diluent. The results from using derris powder indicate that this and probably other rotenone-bearing roots would be effective in ridding infested persons of body lice. Sta-Way lotion killed lice on contact, but the results were less conclusive than in the case of the other materials. As it was not feasible to keep the children under control and observation following treatment, the possibility of reinfestation before examination must be borne in mind. This may be the explanation of the presence of lice on two of the children treated with Sta-Way, and would indicate that this lotion gives only transient protection. There were no complaints of discomfort or reports of ill effects from the use of any of the materials tested. The cost of each treatment, with any of the mixtures except Sta-Way lotion, was less than one cent.

These results were discussed with Dr. L. P. MacHaffie, School Medical Officer, of the Ottawa Public Schools, who subsequently used a 15 per cent solution of Lethane in deodorized kerosene to delouse hundreds of school children. He published (3) some of his results in the *Canadian Public Health Journal*, December, 1941. The following is quoted from his article: "At first we gave two treatments a few days apart, but later it was found that only one treatment was necessary . . . Older girls, mothers and pre-school children were brought to school if possible. . . . No form of treatment or advice that we have ever given in school has been received with such gratification and enthusiasm by the parents. . . . We apply the preparation in one of two ways: by hand or with a fine fly spray. In either case we make sure that the hairs, especially those near the roots, are well soaked. The patient is directed to keep the eyes closed. After the treatment, all excess is removed from the ears, the nape of the neck and the forehead, and the patient is directed not to wash the head for several days: reinfestation from another source is then not so likely. . . . There is every reason to believe that with the use of this preparation (5 per cent or 10 per cent Lethane may be enough) a community can readily and speedily be freed from pediculosis."

Busvine and Buxton (1) have published results from using thiocyanates and rotenone on numerous cases infested with head lice in England. They found that Lethane 384 Special, 50 per cent in a white oil, and a derris cream containing 1 per cent rotenone remained effective for 8-9 days when the hair was not washed. Their results showed that the proportion of failures to obtain complete kills increased as the concentration of the insecticides was reduced.

TABLE I. SUMMARY OF TESTS AGAINST HEAD LICE

Insecticide	Dilution	No. of Cases	Results
Lethane and kerosene*	1:1	10	The lice were killed promptly. The nurses reported the heads to be quite free from adults and nymphs. Hair clippings with one exception bore only dead nits (many containing shrivelled embryos) and empty shells. The exception was a live egg taken on a boy three days after treatment with 1:1. The heads of most of the children were not washed before examination subsequent to treatment. One heavily infested child reported the presence of living lice following treatment, but the nurse found nothing alive 10 days after treatment.
Lethane and kerosene*	1:2	7	
Lethane and kerosene*	1:4	2	
Lethane and kerosene*	1:24	3	
Pyrethrum extract (30 lb.) and kerosene*	1:2	7	The lice succumbed quickly. Hair clippings bore only dead nits, shrivelled embryos and empty shells. The nurses reported that in some cases the hair was washed prior to examination; in others it was not. No lice were found.
Pyrethrum extract (20 lb.) and kerosene*	1:4	1	
Pyrethrum extract (20 lb.) and kerosene*	1:9	2	
Pyrethrum extract (20 lb.) and kerosene*	1:19	3	
Derris extract (5% rotenone) and kerosene*	1:2	7	No living lice were found by the nurses on examination. Nits on hair clippings were also dead. Some washed their hair after treatment; others did not.
Derris extract (5% rotenone) and olive oil	1:9	3	
Derris powder (5% rotenone)	None	8	Lice combed from the freshly treated hair were feebly alive two hours later, but did not recover. At least 5 of the children did not wash their hair (only one definitely reported washing it) during the 3-9 days that elapsed prior to examination. In every case the nurses reported a complete absence of lice. Only one live egg was found on the hair samples (on clipping taken 3 days after treatment).
Sta-Way lotion	None	7	The lice were killed quickly on contact with Sta-Way. However, on making an examination 10 days later, the nurses reported the presence of lice on two children, neither of whom had washed their hair. None were found on the others, two of whom also had not washed their hair.

\*Refined and deodorized kerosene.

Sta-Way was included in the tests because Spencer (5) reported using it with success against crab lice. This material was developed as a mosquito repellent by Granett (2) who reported it to contain diethylene glycol monobutyl ether acetate, diethylene glycol monoethyl ether, alcohol, and corn oil.

#### CRAB LICE AND SCABIES

Following the promising results obtained from using various insecticides against head lice, as already outlined, the co-operation of a number of medical officers of the R.C.A.M.C. in carrying out tests against crab lice\* and scabiest was obtained through the good offices of Lt. Col. A. C. Rankin, Director of Hygiene for the D.G.M.S., Department of National Defence, Ottawa. The authors visited Petawawa Military Camp on May 8, 1941, and made arrangements with Major S. M. Polson, R.C.A.M.C., Camp Medical Officer, and Major (then Lieut.) W. A. Milligan, R.C.A.M.C., Camp Hygiene Officer, for various preparations to be tested by the unit medical officers on such cases of crab lice and scabies that might occur from time to time. Later the co-operation of Capt. A. F. W. Peart, R. C. A. M. C., Camp Hygiene Officer of Camp Borden Military Camp, was also secured.

The insecticides tested were pyrethrum 30 lb. extract (Pyrefume Super 30), derris extract (5 grams of rotenone in 100 cc. of camphor-sassafrassy oil) and aliphatic thiocyanates (Lethane 384 Special).

Ointments were thought likely to be more satisfactory for treating cases of crab lice and scabies than lotions. This apparently proved to be the case, for reports were received on only two of five liquid preparations submitted (5L and 13L in Table 2). These were made up of equal parts of the insecticide and olive oil. In the preparation of the ointments, several materials were tested as bases in various combinations and proportions with the insecticides. Among them were lanolin (hydrous and anhydrous), tallow, benzoated lard, beeswax (white), paraffin, and petrolatum (white and yellow). While the main body of the ointments was made up of a material of medium consistency, such as benzoated lard or petrolatum, a smaller quantity of a firmer material such as beeswax or paraffin was required to compensate for the incorporation of the liquid insecticide. Ointments of good texture and consistency were obtained when lanolin, benzoated lard or petrolatum were used as the main carriers, either alone or in combination. The base or carrier materials were first melted together and cooled slightly; the insecticide material was then stirred in and the whole poured into ointment jars to cool, the covers being placed on the jars immediately after they were filled. This process avoided any significant loss of the insecticidal ingredient by volatilization.

In treating cases of scabies it is customary to soften the skin by friction with soap and warm water followed by a warm bath, and then to apply an acaricide, usually sulphur ointment. In the case of crab lice it is a common practice to shave off the hair from the affected parts and then to scrub them before putting on some form of pediculicide such as mercurial ointment. As scrubbing and shaving were believed not to be necessary when using preparations containing rotenone, pyrethrum, or thiocyanate, and would be likely to increase irritation of the skin, it was suggested to the co-operating medical officers that these practices be omitted. This suggestion was largely followed as regards shaving, but due to a misunderstanding the scrubbing and bathing was persisted in, in the majority of cases treated at Camp Borden. The only other instruction given was that the materials be applied thoroughly to the affected parts.

The following table gives the formulae of the preparations used and other pertinent details concerning the tests. *All of the preparations were reported*

\**Phthirus pubis* Leach.

†*Sarcoptes scabiei* Deg.

Table 2. SUMMARY OF TESTS AGAINST CRAB LICE AND SCABIES

Material	Formula of Material	Date of Report	Name of Reporting Medical Officer	Locality	No. of Cases		Remarks
					Crab Lice	Scabies	
No. 5	Pyrethrum ext. 2 fl. oz. Beeswax 1 oz. Benzoated lard 1 oz.	12. xi. 41 and 26. xii. 41	Capt. A. F. W. Peart	Camp Borden	3	4	Two cases each of crabs and scabies reported no irritation; the others slight irritation.
No. 5A	Pyrethrum ext. 2 fl. oz. Paraffin 1 oz. Benzoated lard 3 oz.	26. xii. 41	Capt. A. F. W. Peart	Camp Borden	2		One case reported initial stinging for 5 min., the other a burning sensation about scrotum for 2-3 hrs.
No. 5D	Pyrethrum ext. 2 fl. oz. Paraffin 1 oz. Petrolatum 3 oz.	26. xii. 41	Capt. A. F. W. Peart	Camp Borden	1	1	No irritation
No. 5F	Pyrethrum 1 fl. oz. Paraffin 1 oz. Petrolatum 4 oz.	19. iii. 42	Capt. A. F. W. Peart	Camp Borden	2	2	The cure of one of the scabies cases was doubtful. One crab case reported slight initial irritation; the others, none.
No. 5L	Pyrethrum ext. 1 fl. oz. Olive oil 1 fl. oz.	12. xi. 41	Capt. A. F. W. Peart	Camp Borden		1	No irritation.
No. 12	Derris ext. 2 fl. oz. Beeswax 1 oz. Benzoated lard 1 oz.	7. vi. 41	Capt. C. H. MacNeill	Petawawa	3		One case of dermatitis
		9. vii. 41	Lieut. R. L. Reeves	Petawawa	3		No complaints; caused slight irritation for 10 minutes.
		12. ix. 41	Capt. A. F. W. Peart	Camp Borden	4	1	A burning sensation for 15-20 min. was reported for the case of scabies. Of the crab lice cases, one reported a feeling of burning around the scrotum but not under the arms, another complained of severe irritation in about an hour, and a third reported severe burning and chafing after 12-24 hrs.



No. 12C	Derris ext. 1 fl. oz. Tallow 3.5 oz.	26. xii. 41	Capt. A. F. W. Peart	Camp Borden	1	Moderate burning sensation for 6 hours; 2nd degree burn on scrotum.
No. 12E	Derris ext. 2 fl. oz. Paraffin 1 oz. Lanolin (anh.) 2 oz. Benzoated lard 3 oz.	26. xii. 41	Capt. A. F. W. Peart	Camp Borden	2	A 2nd degree burn, with peeling, was reported for the crab lice case. Of the scabies one was sent back for a second treatment and reported a burning sensation for 1-2 hours. The other suffered no discomfort.
No. 12F	Derris ext. 1 fl. oz. Tallow 3 oz. Benzoated lard 6 oz.	19. iii. 42	Capt. A. F. W. Peart	Camp Borden	1	The scabies case reported no irritation on application. Of the crab lice cases, one experienced slight irritation for a few minutes, another reported severe irritation and a 2nd degree burn on the scrotum, and two suffered no irritation from the treatment.
No. 13	Lethane 2 fl. oz. Beeswax 1 oz. Benzoated lard 1 oz.	9. vii. 41	Lieut. R. L. Reeves	Petawawa	3	Two were cured with one treatment and the other with two. Noted as superior to existing remedy.
No. 13C	Lethane 1 fl. oz. Tallow 3.5 oz.	12. xi. 41	Capt. A. F. W. Peart	Camp Borden	2	The patients reported a burning sensation for a few minutes after application.
No. 13D	Lethane 2 fl. oz. Paraffin 1 oz. Petrolatum 5 oz.	26. xii. 41	Capt. A. F. W. Peart	Camp Borden	3	A smarting or burning sensation lasting from 10 min. to 1 hr. was reported by 5 cases; it lasted 5-6 hr. in one case of scabies and one of crab lice.
No. 13D	Lethane 2 fl. oz. Paraffin 1 oz. Petrolatum 5 oz.	26. xii. 41	Capt. A. F. W. Peart	Camp Borden	4	Two cases suffered severe irritation for 10 min., one a burning sensation for half hr., and the fourth for 3-4 hr. especially while walking.

TABLE 2 (Continued)

Material	Formula of Material	Date of Report	Name of Reporting Medical Officer	Locality	No. of Cases Crab Lice Scabies	Remarks
No. 13E	Lethane 2 fl. oz. Paraffin 1 oz. Lanolin (anh.) 2 oz. Benzozated lard 3 oz.	26. xii. 41	Capt. A. F. W. Peart	Camp Borden	1 3	The crab lice cases suffered severe irritation all day and a 1st degree burn on scrotum the next day; the other cases reported slight to severe irritation for 10 min. to half hr.
No. 13F	Lethane 1 fl. oz. Paraffin 1 oz. Petrolatum 8 oz.	19. iii. 42	Capt. A. F. W. Peart	Camp Borden	7 2	Of the crab lice cases, one had no irritation, others felt a burning sensation for 2 min. to ½ hr. (one for 8 hrs.) without injury to tissues. The two scabies cases reported severe irritation, but only for 5 min. in one case.
No. 13L	Lethane 1 fl. oz. Olive oil 1 fl. oz.	12. xi. 41	Capt. A. F. W. Peart	Camp Borden	1 2	One crab case and one scabies reported a burning sensation when first applied.
Nos. 12 and 13	See above	19. ix. 41	Capt. P. M. MacDonnell	Petawawa	10 9	All cases were cured with one treatment (some with No. 12, others with No. 13) with one exception (scabies), which was treated twice. The crab cases reported slight irritation lasting about 10 min.; there were no complaints from the scabies patients.
No. 5A, 5D, 12E, 13C, 13D, 13E	See above	19. i. 42	Capt. G. M. Malouf	Petawawa	"About 20 cases" of crab lice and scabies	"These ointments do not burn the skin of infected party...All gave equally good results."
Nos. 5F and 12F	See above	18. iii. 42	Capt. G. M. Malouf	Petawawa	"Several cases" of crab lice and scabies	"A cure is usually apparent in 24 hours. In no case has more than one application been needed. No burning of the skin has resulted..."

to give complete control of both crab lice and scabies in most cases with one application. As the results from using the formulae were received, the percentage of insecticide in the ointments was progressively reduced with a view to ascertaining the effective minimum amount and, if possible, eliminating any irritation to the treated parts.

In Table 2, the treatment of more than 110 cases of crab lice and scabies, of which, perhaps, about 60 per cent were crab lice, is recorded. More exact total figures cannot be given because in two reports from Petawawa the kinds of infestation were not specifically differentiated, and, in one, the number of cases treated was uncertain. All of the mixtures gave complete control of crab lice in one application. With the exception of four cases, which required a second treatment (see 5F, 12E, and 13), the scabies cases, too, were cured with one treatment.

The pyrethrum preparations (5-5L) gave the patients the least discomfort. In most cases they reported either no irritation or slight initial irritation which quickly disappeared. The concentrations used ranged from 15 to 5 times spray strength (about 1.8 to 0.6 per cent pyrethrins).

The concentration of rotenone in the derris extract ointments (12-12F) ranged from 2.5 to 0.5 per cent. Irritation of the skin was most pronounced about the genitals, especially the scrotum, in the treatment of crab lice. Most of the complaints were from Camp Borden, where the parts were scrubbed or washed prior to applying the ointments. Only one case of dermatitis was reported from Petawawa when using the strongest preparation on a case of crab lice. All other cases at that camp either made no complaint or reported slight initial irritation.

The situation was similar in connection with the use of the mixtures containing Lethane (13-13L) in concentrations ranging from 50 to 10 per cent, all of which were effective. The ointment containing the lowest concentration was the least irritating and, judging from the reports from Petawawa, none of them caused any ill effects when applied without scrubbing, washing, or shaving the affected parts.

The following are some extracts from reports addressed to the senior author, additional to those included in Table 2.

From Capt. A. F. W. Peart, R.C.A.M.C., Camp Hygiene Officer, Camp Borden, Ont., Nov. 20, 1941 (re formulae 13, 13L; 5, 5L; 12):

"The Thiocyanates . . . a superficial Dermatitis of varying intensity developed in a number of cases. . . . In some cases the superficial tissues were damaged to such an extent that healing ointments were applied. Healing was complete, however, within a day or two. Undoubtedly, however, this preparation is effective as an insecticide particularly in its rapidity. . . . The Rotenone preparation gave consistently good results, but then, it as well, caused from mild to severe burning in some cases, which required superficial medication. . . . The Pyrethrum preparations caused little or no skin irritation, and, if any, only for the first ten or fifteen minutes. Our results with this product were consistently good. . . . All men receiving treatment for Scabies or Lice were given a very thorough bath particularly around the infested parts. Thus the skin would be somewhat excoriated, which might account for the severe Dermatitis set up by Thiocyanates and Rotenone. Also undoubtedly the skin of some individuals would have a degree of sensitivity to these preparations."

From Capt. Peart, Dec. 26, 1941, (re formulae 5, 5A, 5D; 12C, 12E; 13C, 13D, 13E):

"To generalize our results it would appear that all formulae gave good results as far as could be determined, but some preparations, particular-

ly the Thiocyanates and Rotenone, still caused slight to severe irritation of the skin. . . . The Pyrethrum formulae were the least irritating and the Thiocyanates and Rotenone varied in their degree of irritation or burning, from a mild stinging for 10 to 15 minutes to a severe second degree burn which required medication. It might be well to consider, however, that the only parts which were irritated whatsoever were around the external genitals, particularly the scrotum. Naturally the epidermis is more easily injured there owing to its sensitivity. . . . Undoubtedly these insecticides in their present form are more suitable for treating *Pediculus pubis* and Scabies than mercury or sulphur ointments even in spite of any initial irritation or possible slight superficial damage. We regret that more cases were not treated without a bath, but no doubt any skin reaction would be considerably enhanced by a bath owing to resulting skin abrasions, irritations from strong soaps, and the opening of the pores generally."

From Capt. Peart, March 19, 1942, (re formulae 5F, 12F, 13F):

"It would appear that although the active ingredients of these formulae have been reduced, insecticidal properties for the elimination of *Ped. pubis* and Scabies are still adequate. We believe also that with this lot of formulae the injurious properties are considerably lessened."

From Major W. A. Milligan, R.C.A.M.C., Camp Hygiene Officer, Petawawa Military Camp, Ont., Oct. 23, 1941:

"The medical officers all want Nos. 12 and 13. . . . It is hoped that these preparations will be placed on issue and made available to the Army Medical Stores."

From Major Milligan, Nov. 11, 1941:

". . . we want Nos. 12 and 13. The M.O.'s all like it very much and keep asking for it, and use it in preference to Scabanca, etc."

From Major Milligan, Dec. 3, 1941:

"I can safely state that the use of these preparations (containing thiocyanates or rotenone) would be more satisfactory without previous scrubbing of the skin. Any dermatitis that we had was due to a previous washing of the skin."

#### BARBER'S ITCH

Among the formulae submitted for testing against crab lice and scabies, which, however, was not reported on in that connection, was a lotion of one part of Lethane 384 Special and three parts of light Russian oil. Capt. P. M. MacDonnell, R.C.A.M.C., tried this on a case of barber's itch, at Petawawa Military Camp, and submitted the following report to the Camp Medical Officer, on Sept. 19, 1941:

"A bad case of Barber's itch was cured in 10 days with formula L2. The person concerned had been using several remedies without satisfactory results. Treatment given proved successful."

#### SUMMARY

Results are presented of tests of a number of mixtures against head lice on school children, and scabies and crab lice on soldiers.

Preparations containing Lethane (a mixture of aliphatic thiocyanates), 20 lb. and 30 lb. extracts of pyrethrum, or derris extract (5% rotenone), in various concentrations, quickly killed head lice and their eggs. Derris powder (5% rotenone) was also effective. Sta-Way, a proprietary repellent lotion, killed the lice on contact, but results were less conclusive than with the other materials. The Lethane and pyrethrum extract, mixed with deodorized kerosene, were effective in concentrations as low as ordinary spray strength, but for general use higher concentrations are probably desirable. The liquid preparations were applied at the rate of one-quarter fluid ounce to each female head and about



one-half that quantity to each male head. The dosage of derris powder was one level teaspoonful per female head. No discomfort or ill effects from the use of these preparations was reported. The cost of materials for each treatment, except in the case of Sta-Way, was less than one cent.

All cases of crab lice and more than 90 per cent of cases of scabies were completely controlled by one application of ointments containing pyrethrum extract, Lethane, or rotenone in various concentrations, and lotions containing pyrethrum extract or Lethane. The remaining cases of scabies were controlled by a second treatment. The concentrations of insecticides used ranged from 1.8 to 0.6 per cent pyrethrins (15 to 5 times spray strength), 2.5 to 0.5 per cent rotenone, and 50 to 10 per cent Lethane (about 10 to 2 times spray strength). Scrubbing or shaving the affected parts before treatment was found to be unnecessary and undesirable, the former, at least, being an important contributing factor to skin irritation, especially when using ointments containing Lethane or rotenone. Reduction of the concentration of these latter materials decreased the tendency of ointments containing them to irritate the skin, without impairing their effectiveness. The pyrethrum preparations caused little or no discomfort even when prior washing or scrubbing was practised.

The reported cure of a case of barber's itch by a mixture of Lethane and Russian oil is recorded.

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#### NEW NEARCTIC CRANE-FLIES (TIPULIDAE, DIPTERA). PART XVIII.

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In the present article I am describing a few unusually interesting species of Tipulidae from Washington, Oregon and northern California. The Oregon material was included in extensive series sent to me, by Professor Herman A. Scullen, contained in the Oregon Agricultural Experiment Station Collection, Corvallis. The Washington and California specimens, together with one species from extreme northwestern Oregon, were included in a small but very interesting series of specimens taken by Dr. and Mrs. Henry K. Townes and kindly presented to me by the collectors. I express my indebtedness to these entomologists for this continued interest in making known the crane-fly fauna of the Vancouverian faunal area.

#### *Prionocera oregonica* n. sp.

General coloration dark brownish gray, the praescutum with four darker brown stripes; antennae black throughout, the flagellar segments weakly produced, feebly serrate; wings with a weak brown tinge, the prearcular and costal fields more brightened; *Rs* relatively long and straight; cell 2nd *A* narrow; abdomen dark grayish brown, with a conspicuous brown tergal stripe, the lateral borders of the tergites narrowly yellow; male hypopygium with the caudal margin produced into four slender finger-like lobes arranged in pairs, each pair separated

by a relatively narrow notch; median region further produced into two deflexed spinous points.

*Male.* Length about 10.5 mm.; wing 12 mm.; antenna about 3.3 mm.

Frontal prolongation of head black above, very sparsely pruinose, more reddish brown on ventral surface; nasus stout, tufted with conspicuous yellow setae; mouthparts and palpi intense black. Antennae black throughout, the segments weakly pruinose; flagellar segments at apex on inner face rather weakly produced to give the organ a feebly serrate appearance; terminal segment abruptly narrowed, as common in the genus, slightly more dilated on proximal half. Head dark grayish brown, clearer gray on orbits, with indications of a still darker median vitta on vertex; anterior vertex broad, nearly twice as wide as the exposed diameter of one eye.

Pronotal scutum dark gray, narrowly darker medially; scutellum yellow. Mesonotal praescutum dark brownish gray, with four darker brown entire stripes, the intermediate pair contiguous at their extreme cephalic ends; scutum gray, each lobe with two poorly defined dark brown areas; scutellum gray, parascutella yellow; mediotergite light gray, pleurotergite gray, with a conspicuous, pale yellow area on dorsal katapleurotergite. Pleura light gray, restrictedly patterned with pale yellow on the sclerites of the mesepimeron and metapleura; dorsopleural membrane buffy yellow. Halteres brownish yellow, knob dark brown. Legs with the coxae light gray, with conspicuous black setigerous punctures; trochanters obscure yellow; femora and tibiae obscure yellow, the tips conspicuously blackened, the amount subequal on all legs; tarsi black. Wings with a weak brown tinge, the cells just beyond the anterior cord a trifle darker; prearcular and costal fields more brownish yellow; stigma pale brown, poorly defined; veins brown, those in the brightened portions more yellow. Venation:  $R_s$  relatively long and straight, about one-third longer than vein  $R_2$ ; petiole of cell  $M_1$  more than twice  $m$ ; cell 2nd  $A$  relatively narrow.

Abdomen dark brown, gray pruinose, especially the sternites; a broad brown median stripe on tergites, interrupted by pale caudal rings to the segments, the lateral tergal borders more broadly yellow. Male hypopygium with the tergite, when viewed from above, with the caudal margin bearing four slender finger-like lobes, the sublateral pair as long as the laterals and a little stouter at base, separated from the laterals by a relatively narrow notch; lateral lobes with their mesal face microscopically setulose; sublateral lobes with scattered coarse setae that are more numerous on the mesal face; median area of tergite produced into a low lobe that is deflexed and produced into two closely approximated or fused glabrous spinous points; dorsal surface of tergite on either side of midline with a diffuse group of about twenty setae, lying immediately cephalad of the sublateral marginal lobes. Outer dististyle oval, gradually narrowed to the obtuse tip. Inner dististyle with the rostral region relatively slender, on mesal face style near base with a broader and shorter flattened lobe.

*Habitat.* Oregon (Northeast).

*Holotype.* ♂, Aneroid Lake, Blue Mountains, altitude 7,500 feet, June 25, 1929 (H. A. Scullen).

*Prionocera oregonica* is very distinct from the previously described Nearctic species. It is apparently closest to *P. primoveris* Alexander and *P. sordida* (Loew), differing conspicuously in the structure of the male hypopygium.

#### *Limonia (Limonia) tributaria* n. sp.

General coloration of mesonotal praescutum black, with three more reddish stripes, the humeral portions restrictedly yellow; antennae with scape and pedicel black, flagellum brown, the first segment paler basally; fore coxae dark brown; femora obscure yellow, with two relatively narrow dark brown rings,

the outer one apical in position; wings with a weak brown tinge, restrictedly patterned with darker brown and cream-colored areas, the latter including conspicuous marks at ends of veins *Cu*, 1st *A* and 2nd *A*, the pale color including the veins; male hypopygium with the mesal-apical lobe of gonapophysis very low and obtuse, entirely pale.

*Male*. Length about 9.5-10 mm.; wing 9.5-10.5 mm.

*Female*. Length about 12 mm.; wing 11 mm.

Rostrum and palpi black. Antennae of moderate length, if bent backward ending a short distance before wing-root; scape and pedicel black, flagellum brown, the basal segment brighter at proximal end; flagellar segments long-oval to subcylindrical, with long verticils. Head above heavily gray pruinose; anterior vertex of moderate width, approximately one and one-half times the diameter of scape in male, twice this in female.

Pronotum broadly dark brown above, paler on sides. Mesonotal praescutum heavily patterned with black, the broad central area reddish brown, more brownish black in front, bordered laterally by conspicuous black interspaces; lateral stripes reddish brown to obscure yellow, bordered laterally by brownish black; humeral and very narrow lateral borders yellow, anterior interspaces with conspicuous erect black setae; posterior sclerites of notum dark brown, the central portion of scutum paler; pleurotergite pale, restrictedly darkened along ventral edge near root of haltere. Pleura yellow, the propleura and extensive areas on anepisternum and sternopleurite dark brown; posterior sclerites paler. Halteres with stem pale, knob dark brown. Legs with fore coxae dark brown, middle and hind pair yellow; trochanters yellow; femora obscure yellow, with two relatively narrow dark brown rings, the apical one a little narrower and more deeply colored; the yellow ring enclosed a trifle wider than the darkened tip; tibiae and basitarsi pale brown, the tips narrowly darkened; terminal tarsal segments black. Wings with a weak brownish tinge, restrictedly patterned with darker brown and cream-yellow areas; the darker spots include the circular stigma and smaller seams at origin of *Rs*, fork of *Sc*, cord and outer end of cell 1st *M*<sub>2</sub>, and as a conspicuous seam along vein *Cu*, interrupted a short distance before *m-cu*; pale brown washes in cell *R* before origin of *Rs* and in outer ends of cells *Cu* to 2nd *A*, inclusive; the cream-colored areas include the prearcular and costal fields, an area beyond the stigma, extensive areas at ends of veins *Cu*, 1st *A* and 2nd *A*, the second largest and crossing cell *Cu* into *M*, thence to basal portions of cells *M* and *Cu*, brightening vein *Cu*<sub>2</sub> but not *Cu*<sub>1</sub>; bases of cells *R* to 2nd *A* more or less distinctly brightened; veins brown, brighter in the yellow costal portions and at the tips of veins *Cu* to 2nd *A*. Venation: *R*<sub>2+3</sub> longer than *R*<sub>1+2</sub>; vein *R*<sub>3</sub> deflected strongly caudad on more than its distal half; cell 1st *M*<sub>2</sub> relatively small; *m-cu* shortly before fork of *M*, the distance more or less variable.

Abdominal tergites dark brown, the extreme posterior borders paler; hypopygium yellow; basal sternites obscure yellow, the outer segments more darkened. Ovipositor with the cerci very slender, nearly straight; hypovalvae blackened at bases. Male hypopygium with the tergite strongly narrowed outwardly. Dististyle long-oval, narrowed on distal third, the short apex subobtusely, without spines or denticles. Gonapophyses with mesal-apical lobes very low and obtuse, entirely pale.

*Habitat*. California.

*Holotype*. ♂, Crescent City, Del Norte Co., August 3, 1940 (H. & M. Townes). *Allotopotype*, ♀. *Paratopotypes*, 2 ♂♂. *Paratype*, Sex?, Berkeley, Alameda Co., May 15, 1915 (M. C. Van Duzee).

The present species is quite distinct from all Nearctic forms so far discovered. It is closest to species such as the western Palaearctic *Limonia*, (*Limonia*) *dilutior* (Edwards) and *L. (L.) hercegovinae* (Strobl), especially

the latter, yet is quite distinct in details of coloration and structure of the male hypopygium. Compared with the more than 100 species of the subgenus known to me from eastern Asia, including approximately 60 from Japan and China, there are no relatives closer than *hercegovinae*. The broken specimen from Berkeley has been in my hands for many years, through the generosity of the late Mr. Millard C. Van Duzee, but was undeterminable until the male sex was available.

***Limonia (Diceranomyia) acerba* n. sp.**

Size large (wing, ♂, over 8 mm.); general coloration dark brown, sparsely pruinose; antennae short, flagellar segments short-oval; anterior vertex relatively broad; halteres short, knobs dark brown; wings with a weak brown tinge, stigma darker brown; inner end of cell 1st  $M_2$  arcuated; *m-cu* shortly before fork of  $M$ ; abdominal tergites dark brown or brownish black; male hypopygium with the ventral dististyle conspicuously whitened; ninth tergite large, semicircular in outline, the caudal margin convexly rounded, with a very small median notch surrounded by a few long setae; ventral dististyle with the rostral prolongation blackened, deep-based, narrowed into an unusually slender beak; rostral spines long, from a low common tubercle at base of prolongation.

*Male.* Length about 8 mm.; wing 8.5 mm.; antenna about 1.2 mm.

Rostrum short, obscure yellow; palpi brownish black. Antennae short, brownish black throughout; flagellar segments short-oval, without pedicels; terminal segment about one-half longer than the penultimate. Head with front obscure yellow; central portion of vertex extensively brownish gray, the genae and occiput paling to yellow; anterior vertex relatively broad, approximately three times the diameter of scape.

Pronotum dark brown, sparsely pruinose. Mesonotal praescutum with the very restricted ground dark reddish brown, the disk almost covered by three black pruinose stripes that are subconfluent, restricting the interspaces to narrow obscure lines; posterior sclerites of notum black, sparsely pruinose, the parascutella obscure yellow; suture between mediotergite and pleurotergite restrictedly yellow. Pleura yellow, very weakly patterned with brown, most distinct on the anepisternum, the color weaker on sternopleurite, the whole surface with a very slight pruinosity. Halteres short; stem yellow, knob dark brown. Legs with coxae and trochanters obscure yellow, remainder of legs broken. Wings with a weak brown tinge, the prearcular field more yellow; stigma darker brown, its margins ill-defined; veins dark brown. Venation:  $Sc_1$  ending a short distance beyond origin of  $Rs$ ,  $Sc_2$  a short distance from its tip, immediately before  $Rs$ ; inner end of cell 1st  $M_2$  strongly arcuated, lying considerably before inner end of cell  $R_2$ ; *m-cu* a short distance before fork of  $M$ . In the left wing of holotype, an adventitious crossvein in axil of  $Rs$ , close to the base.

Abdomen relatively long; tergites dark brown to brownish black, the extreme caudal borders of the intermediate segments narrowly pale; basal sternites obscure yellow, the outer segments, including hypopygium, more brownish black; ventral dististyle conspicuously whitened. Male hypopygium with the ninth tergite large, semicircular in outline, the caudal margin evenly, convexly rounded, with a tiny to scarcely evident median notch; surrounding this small incision about nine long pale setae, with additional scattered bristles along posterior margin and nearer the lateral angles; disk of tergite free from major setae. Basistyle with the ventro-mesal lobe large, simple, at its base with two rounded lobes set with long setae. Dorsal dististyle a strongly curved chitinized rod, the tip suddenly narrowed into a spine. Ventral dististyle large and fleshy, its area about one-half greater than that of basistyle; rostral prolongation and the lower margin of style almost to base blackened; rostral prolongation broad-based, suddenly narrowed into a very slender outer beak; rostral spines long and slender.



er, exceeding the rostrum in length, placed close together on a blunt common tubercle on the outer portion of dilated margin of prolongation. Gonapophyses with mesal-apical angle a strong blackened lobe, curved laterad to an acute point. A conspicuous, transversely corrugated membrane projects from the genital chamber, apparently connected with the phallosome rather than with the anal region.

*Habitat.* Washington.

*Holotype.* ♂, Mount Rainier, altitude 5,700 feet, July 8, 1940 (H. & M. Townes).

The present fly is apparently closest to species such as *Limonia* (*Dicranomyia*) *fulva* (Doane), differing conspicuously in the coloration of body, venational details, and, especially, the structure of the male hypopygium. A resemblance to species such as *L. (D.) libertoides* (Alexander) is purely superficial.

***Pedicia* (*Tricleyphona*) *bleomata* n. sp.**

Allied to *simplicistyla*; general coloration pale yellow, the postnotal mediotergite with darkened lateral borders; antennae and halteres yellow throughout; legs yellow, only the outer tarsal segments weakly darkened; wings pale yellow, restrictedly patterned with brown; a supernumerary crossvein in cell  $R_2$  at near one-third the length of cell; male hypopygium with the caudal margin of tergite with a broad U-shaped median notch; basistyle with the interbase a long slender spine, opposite its base with a dense brush of long yellow setae; outer dististyle narrowed outwardly, the distal portion set with slender spines; inner dististyle a slender straight rod, at base on caudal face with a long, gently curved spine.

*Male.* Length about 15 mm.; wing 14 mm.; antenna about 1.5 mm.

Rostrum reddish brown; palpi black. Antennae pale yellow throughout; pedicel long, about two-thirds the length of scape; flagellar segments cylindrical, the basal segments with their ends truncated and closely applied to one another; verticils of outer segments long and conspicuous; alternate flagellar segments with stronger and more conspicuous verticils than the intervening ones. Head pale whitish gray; vertical tubercle rounded above.

Pronotum pale yellow, weakly darkened above, more heavily so on cephalic portion. Mesonotal praescutum pale yellow with four barely indicated stripes, the intermediate pair more reddened and distinct at their anterior ends; scutal lobes weakly darkened on outer portions, the median area and the scutellum ashy white; parascutella weakly darkened; mediotergite long and narrow, pale yellow, the lateral borders conspicuously brown, the lines converging posteriorly, pleurotergite pale yellow. Pleura, including dorsopleural region, pale yellow. Halteres pale yellow throughout. Legs pale yellow, the terminal tarsal segments a trifle darker. Wings with a pale yellow tinge, the costal border, including cells  $C$ ,  $Sc$  and  $Sc_1$ , uniformly darker, becoming more intense before  $h$ ; stigma faintly darker in this general clouded area; small dark brown seams at  $Sc_2$ , origin of  $Rs$ , on anterior cord,  $R_2$ , the supernumerary crossvein in cell  $R_2$ , and faintly over  $m$  and fork of  $M_3+4$ ; veins yellow, darker in the clouded areas. Venation:  $Rs$  square at origin;  $r-m$  connecting with  $Rs$  about one-fourth its own length before fork;  $R_2+3+4$  subequal to  $r-m$ ,  $R_2+3$  erect at origin; a supernumerary crossvein in cell  $R_2$  at near one-third the length of cell and more than its own length before the level of  $R_2$ ; cell 1st  $M_2$  closed;  $m$  on  $M_2$  shortly beyond origin of latter;  $m-cu$  close to fork of  $M$ .

Abdomen elongate; tergites dark brown laterally, paler on central portion to produce a double tergal stripe, these lines wider and becoming subconfluent on outer segments; sternites yellow, the incisures broadly yellow, involving chiefly the apex of each segment but including the narrow bases of the more

proximal segments; segments eight and nine uniformly blackened. Male hypopygium with the caudal margin of tergite with a broad U-shaped median notch, the broad lateral lobes obtusely rounded. Basistyle with the interbase a long spine, the proximal third stouter and provided with delicate setulae, the remainder of the spine almost straight, bent at a slightly different angle from the base, at point of bending with a small acute spine on one face and a low flange on the opposite side; face of basistyle opposite origin of interbase with a dense brush of long yellow setae. Outer dististyle ear-shaped, darkened, narrowed outwardly, with almost the apical half set with slender spines and with numerous long setae. Inner dististyle a slender straight rod, narrowed to the obtuse tip, at base on caudal face with a long, gently curved spine that is approximately two-thirds as long as the main body of the style.

*Habitat.* Oregon (Clatsop Co.)

*Holotype.* ♂, Seaside, August 7, 1940 (H. & M. Townes).

Very similar in its general appearance to *Pedicia* (*Tricyphona*) *simplicistyla* (Alexander), differing conspicuously in the structure of the male hypopygium, notably the tergite, basistyle and the inner dististyle.

### *Hexatoma* (*Eriocera*) *sculleni* n. sp.

Belongs to the *spinosa* group; size large (wing, ♂, 21 mm.); antennae (♂) of unusual length, nearly three times the length of the wing; flagellar segments with series of erect spinous setae on lower face; head, thorax and sides of abdomen with very long and dense white setae; mesonotal praescutum with four narrow black stripes; femora reddish brown, the tips narrowly blackened; wings whitish subhyaline, patterned with brown, including conspicuous seams along veins  $R_5$  and  $Cu$ , the letter in cell  $M$ ; cell  $M_1$  present, about as long as its petiole.

*Male.* Length, about 17 mm.; wing 21 mm.; antenna about 61 mm. Antenna: Flagellar segment 1—9 mm.; 2—12.2 mm.; 3—17.5 mm.; 4—21 mm.; 5, microscopic.

Rostrum brown; palpi black. Antennae (♂) very long, as shown by the measurements given above; total length nearly three times the length of wing; scape tumid, reddish brown, darker above; pedicel very short, dark brown; flagellum brownish black, the outer segments uniformly blackened; basal four flagellar segments with rows of strong spinous setae on lower face, longer and more like normal setae on the fourth flagellar segment; first flagellar segment with about 30 spines in each row; second segment with about 45; third with about 60; fourth with about 80. Head brown, more yellowish brown on front, orbits gray; dorsum of head chiefly concealed by the mesothoracic setae; head with long pale setae, especially on ventral surface.

Pronotum scarcely evident from above, due to the abundant vestiture of mesothorax. Mesonotal praescutum light gray, with four narrow black stripes, the median interspace on cephalic half of sclerite about as wide as the darkened intermediate stripes, more narrowed behind, the dark stripes not reaching the suture behind; scutum gray pruinose, each lobe with blackened areas; posterior sclerites of notum brownish black, pruinose. Mesonotum, especially the praescutum and scutellum, with unusually long, conspicuous, and very dense white setae; on the praescutum the setae occur on both the stripes and interspaces, though more dense on the latter, especially the lateral portions. Pleura black, with conspicuous gray pruinose areas; pleural sclerites with long, conspicuous pale setae. Halteres with stem brownish yellow, knob dark brown. Legs with coxae reddish brown, pruinose, with long white setae; trochanters reddish; remainder of legs, with exception of posterior pair, broken; femora reddish brown, the tips narrowly blackened; tibiae reddish yellow, the tips still more narrowly darkened; tarsi broken beyond base of the obscure yellow

basitarsus. Wings with the ground color whitish subhyaline; prearcular field and cells *C* and *Sc* yellowish brown; stigma oval, darker brown; broad, conspicuous, brown seams along veins *Cu* and *R*<sub>5</sub>; much narrower similar brown seams on the other longitudinal veins, least conspicuous on 1st *A* and basal portion of *M*; proximal third or more of cell *Cu* washed with brown; veins dark brown. Restricted series of macrotrichia on veins *R*<sub>2</sub> and *R*<sub>3</sub> and very scattered to virtually lacking on *M*<sub>1</sub> and *M*<sub>2</sub>. Venation: *R*<sub>1+2</sub> about one-half longer than *R*<sub>2</sub>; cell *M*<sub>1</sub> present, about as long as its petiole; cell 1st *M*<sub>2</sub> about twice as long as vein *M*<sub>4</sub> beyond it; *m-cu* one-half its length or more beyond fork of *M*; distal section of *Cu*<sub>1</sub> less than one-half *m-cu*.

Abdominal tergites brownish black, the surface sparsely pruinose, the incisures, especially the bases, restrictedly reddish; hypopygium black; lateral portions of abdomen with long pale setae; sternites more reddish brown, sparsely pruinose.

*Habitat.* Oregon (Linn Co.).

*Holotype.* ♂, Cascadia, August 15, 1924 (H. A. Scullen).

I take great pleasure in naming this species in honor of Professor Scullen who has added most materially to our knowledge of the Tipulidae of Oregon. The species is very different from the only other western Nearctic species of the genus having elongate antennae, *Hexatoma (Eriocera) californica* (Osten Sacken). It is more similar to the eastern Nearctic *H. (E.) spinosa* (Osten Sacken), which has the antennae still shorter than in the present fly (♂, 50 mm. or less) and with the details of coloration, especially of the wings and thorax, distinct.

### *Hexatoma (Eriocera) solor* n. sp.

Belongs to the *spinosa* group; antennae (♂) relatively long, being approximately as long as the body or exceeding three-fourths the length of wing; mesonotal praescutum gray, with four relatively narrow black stripes; femora chiefly black, only the basal fourth or less obscure yellow, distributed chiefly along the lower face of segment; remainder of legs black; wings relatively narrow, strongly suffused with brown, the centers of the cells pale; stigma conspicuous, dark brown.

*Male.* Length about 14–15 mm.; wing 17–17.5 mm.; antenna about 13.5–14.5 mm.

Rostrum and palpi black. Antennae black throughout, the scape a trifle pruinose; antennae (♂) approximately as long as the entire body or exceeding three-fourths the length of wing; first flagellar segment shorter than either the 2nd, 3rd or 4th, which are subequal; first flagellar segments with from 8–13 spinous setae; second segment with about 15–18 spines in a single row. Head brownish gray, brighter on front; setae elongate, tawny.

Pronotum brownish gray. Mesonotal praescutum with the ground color gray, more brownish gray on the posterior interspaces; four relatively narrow black stripes; median interspace only about one-half as wide as either intermediate stripe; vestiture relatively long but sparse, pale; scutum brownish gray, each lobe with a conspicuously blackened center; posterior sclerites of notum black, sparsely pruinose; vestiture long but sparse. Pleura black, heavily pruinose, with conspicuous pale setae. Halteres black, the extreme base of stem yellowish brown. Legs with the coxae gray pruinose; trochanters dark brown; femora chiefly black, with approximately the basal fourth or less obscure yellow, especially distinct on lower face; remainder of legs black. Wings relatively narrow, as compared with *eriphora*, strongly suffused with brown, especially along the veins, the centers of the cells streaked with paler; prearcular and costal fields a trifle darker; stigma oval, dark brown, conspicuous; veins dark brown. A restricted series of macrotrichia on vein *R*<sub>5</sub>; elsewhere beyond cord these lacking

or very sparse. Venation: Cell  $M_1$  present,  $m-cu$  approximately two-thirds its length beyond the fork of  $M$ .

Abdomen relatively short, black, gray pruinose; vestiture long and pale on the more basal segments, much shorter on the succeeding ones; hypopygium black.

*Habitat.* Oregon (Benton Co.).

*Holotype.* ♂, (Aalsea Maltby), August 8, 1932 (James Roaf). *Paratypes*, 3 ♂ ♂.

*Hexatoma (Eriocera) solor* is closest to *H. (E.) eriophora* (Williston), differing most evidently in the more elongate antennae of the male, which here exceeds three-fourths the length of wing. In *eriophora* the antennae are always less than two-thirds of the wing-length, usually even shorter, about one-half the wing length (in holotype ♂ of *eriophora*, University of Kansas, wing, 15.3 mm.; antenna, 7.2 mm.).

## NOTES

### THE STING OF *POLISTES*

In a note on the sting of *Polistes pallipes* Lep. (Canad. Ent., LXXIV, p. 95, 1942) Phil Rau asserts that the sting of *Polistes* of the temperate regions is usually not severe, the pain lasting for 10 minutes to a half hour. Until I was stung on July 15 by two workers of *Polistes canadensis* var. *annularis* (Linn.), my experience had been in agreement with his. One sting was received on the index finger of the right hand, just before the distal end of the first phalanx. It was extremely painful, and within thirty minutes the entire hand became swollen nearly to the wrist. The swelling persisted for more than thirty-six hours, and was during this time accompanied by numbness and pain, which resembled that of a severely bruised knuckle. At the point of the sting the skin was still sensitive six days later. The other sting was received just below the elbow on the outer surface of the left arm. Pain, swelling, and numbness also accompanied this sting and similarly persisted.

In the handling and collecting of aculeate Hymenoptera for more than twenty years, I have never before experienced such severe consequences from the sting of any species. I am inclined to believe that there is great individual difference in susceptibility to the poisons of aculeates, and that susceptibility may vary considerably in the individual from time to time.

Leland H. Taylor,

West Virginia University, Morgantown, W. Va.

### FALL FLIGHT OF BRUCE'S MEASURING WORM, *OPOROPHTERA BRUCEATA* HULST. (LEPIDOPTERA, GEOMETRIDAE)

Hundreds of males of the western form of this species (det. J. McDunnough) were seen flying across the highway at Larkin, Enderby and Salmon Arm, B. C., on the night of October 29, 1942. Observations were made only between 6:00 p. m. and midnight, during which period there was a light south and southeast wind, intermittent rain, and a temperature of 43° F. Mr. E. P. Venables tells me that this is a typical habit of the species in this region. A portion of both sexes of the brood emerges in the fall, mates, and the (wingless) females lay eggs; the rest of the brood does not appear until the following spring. Essig, in his *Insects of Western North America*, p. 699, states that "the winter is spent as pupae in the soil and the adult females ascend the trees to lay eggs in the spring".

Hugh B. Leech, Vernon, B. C.

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